

Natural Course of Adolescent Major Depressive Disorder: I. Continuity Into Young Adulthood

PETER M. LEWINSOHN, PH.D., PAUL ROHDE, PH.D., DANIEL N. KLEIN, PH.D., AND JOHN R. SEELEY, M.S.

ABSTRACT

Objective: To examine the course of adolescent major depressive disorder (MDD) by comparing rates of mood and non-mood disorders between age 19 and 24 years in participants with a history of adolescent MDD versus participants with adolescent adjustment disorder with depressed mood, nonaffective disorder, and no disorder. **Method:** Participants from a large community sample who had been interviewed twice during adolescence completed a third interview assessing Axis I psychopathology and antisocial and borderline personality disorders after their 24th birthday: 261 participants with MDD, 73 with adjustment disorder, 133 with nonaffective disorder, and 272 with no disorder through age 18. **Results:** MDD in young adulthood was significantly more common in the adolescent MDD group than the nonaffective and no disorder groups (average annual rate of MDD = 9.0%, 5.6%, and 3.7%, respectively). Adolescents with MDD also had a high rate of nonaffective disorders in young adulthood (annual nonaffective disorder rate = 6.6%) but did not differ from adolescents with nonaffective disorder (7.2%). Prevalence rates of dysthymia and bipolar disorder were low (<1%). Adolescents with adjustment disorder exhibited similar rates of MDD and nonaffective disorders in young adulthood as adolescents with MDD. **Conclusions:** This study documents the significant continuity of MDD from adolescence to young adulthood. Public health implications of the findings are discussed. *J. Am. Acad. Child Adolesc. Psychiatry*, 1999, 38(1):56–63. **Key Words:** major depressive disorder, recurrence, continuity, comorbidity, adolescents, adjustment disorder.

It is well established that major depressive disorder (MDD) occurs in older adolescents at levels comparable with levels in adults, with point prevalence rates generally between 2% and 5% (e.g., Kashani et al., 1987; Lewinsohn et al., 1993; McGee et al., 1990; Velez et al., 1989; Verhulst et al., 1997). In light of its high prevalence, it is important to examine the course and outcome of MDD in children and adolescents. A number of recent studies have explored the longitudinal course of childhood and adolescent MDD in both clinical (e.g., Garber et al., 1988; Harrington et al., 1990; Kovacs et al., 1984) and community (e.g., Cohen et al., 1993; Feehan et al., 1993; Garrison et al., 1990; Kandel and Davies, 1986; Reinherz et al., 1993) samples. On balance, these studies suggest that (1) most children and adolescents recover

from the index MDD episode (e.g., Kovacs, 1996; Lewinsohn et al., 1994a); (2) the relapse/recurrence rate of juvenile MDD is substantial (e.g., Kovacs et al., 1984; Lewinsohn et al., 1994a; McCauley et al., 1993; Rao et al., 1995); (3) a minority of children and adolescents with MDD develop manic/hypomanic episodes (e.g., Geller et al., 1994; Lewinsohn et al., 1995; Rao et al., 1995; Strober et al., 1993); (4) the course of MDD in adolescents appears to be similar for males and females (e.g., Kovacs et al., 1984), although a few studies have suggested that females may have a higher rate of recurrence (e.g., McCauley et al., 1993); and (5) comorbid nonaffective disorders predict a more severe course of depression (e.g., Sanford et al., 1995), although some investigators have reported that comorbid externalizing disorders are associated with lower rates of depression at follow-up (Harrington et al., 1991).

Although several longitudinal projects with children and adolescents have been conducted, few have followed research participants into adulthood. As a result, less is known about the long-term course of child and adolescent MDD and its continuity with adult MDD. Of the few studies that have followed children and adolescents with

Accepted August 19, 1998.

Drs. Lewinsohn and Rohde and Mr. Seeley are with the Oregon Research Institute, Eugene. Dr. Klein is with the State University of New York at Stony Brook.

This research was supported in part by NIMH awards MH40501, MH50522, and MH52858.

Reprint requests to Dr. Lewinsohn, Oregon Research Institute, 1715 Franklin Blvd., Eugene, OR 97403-1983.

0890-8567/99/3801-0056/\$03.00/0 © 1999 by the American Academy of Child and Adolescent Psychiatry.

MDD into adulthood, most report relatively high rates of mood disorders in these individuals as young adults (e.g., Eastgate and Gilmour, 1984; Garber et al., 1988; Harrington et al., 1990). In the 3 studies that used comparison groups, the rate of mood disorders in adulthood was significantly higher among children and adolescents with MDD than children and adolescents with nonaffective disorders (Garber et al., 1988; Harrington et al., 1990) and normal controls (Rao et al., 1995). In contrast, depressed children and adolescents did not differ from psychiatric controls on rates of nonaffective disorders in adulthood (Garber et al., 1988; Harrington et al., 1990), although the rate of anxiety disorders in adulthood among children and adolescents with MDD was higher than among normal children and adolescents (Rao et al., 1995).

Most of the studies following depressed children and adolescents into adulthood have used relatively small samples from clinical settings. However, most children and adolescents with MDD do not seek treatment (e.g., Keller et al., 1991; Lewinsohn et al., 1997; Offord et al., 1987), and treated samples of children and adolescents are biased in a number of respects (Goodman et al., 1997). Therefore, longitudinal studies of community samples that continue into adulthood are needed. To our knowledge, information regarding the rates of psychopathology derived from structured diagnostic interviews in a large community sample of children or adolescents who have been followed into adulthood has not previously been reported.

This study is one in a series of reports from the Oregon Adolescent Depression Project, which is based on a large, randomly selected cohort of high school students who were assessed at 2 points over a period of 1 year (T_1 and T_2) using rigorous diagnostic criteria and structured diagnostic interviews. Recently, a large subset of participants completed a third (T_3) interview after their 24th birthday.

In this report we examine whether children and adolescents with a history of MDD are at increased risk for new episodes of MDD in adulthood and whether they are at increased risk for other affective and nonaffective disorders as adults. Participants with a history of MDD in childhood or adolescence are compared with (1) participants with a history of adjustment disorder with depressed mood prior to age 19 years, (2) participants with other nonaffective disorders prior to age 19 (primarily anxiety, substance use, and disruptive behavior disorders), and (3) participants with no history of psychiatric disorder prior to age 19.

We singled out adjustment disorder with depressed mood (referred to as "adjustment disorder" for the remainder of the report) for several reasons. First, as a "near-neighbor" category, it provides a good comparison for MDD. Basically, an adjustment disorder represents a clinically significant reaction in response to a stressor, in which the symptoms do not meet criteria for MDD. Second, its relationship to the mood disorders is unclear. Several studies have reported that most youths with adjustment disorder recover quickly and that their risk of developing other psychiatric disorders is less than or does not differ from that of psychiatric controls, although it may be greater than that of children without any psychiatric disorder (Kovacs et al., 1984, 1994, 1995). Conversely, other studies have reported that the majority of children and adolescents with adjustment disorder have poor outcomes and often develop more severe forms of psychopathology (Andreasen and Hoenk, 1982; Cantwell and Baker, 1989). Finally, adjustment disorder is one of the most common psychiatric diagnoses in adolescents (Greenberg et al., 1995; Newcorn and Strain, 1998).

METHOD

Participants

Participants in the Oregon Adolescent Depression Project were randomly selected from 9 senior high schools in western Oregon. A total of 1,709 adolescents (aged 14–18 years) completed the initial (T_1) assessments (interview and questionnaires) between 1987 and 1989, with an overall participation rate of 61%. At the second assessment (T_2), 1,507 participants (88%) returned for a readministration of the interview and questionnaire (mean T_1 - T_2 interval = 13.8 months, SD = 2.3). Differences between the sample and the larger population from which it was selected, and between participants and those who declined to participate or dropped out of the study, were small (additional details regarding the T_1 and T_2 assessments are provided by Lewinsohn et al., 1993).

After individuals reached their 24th birthday, all participants with a history of MDD and other psychopathology at T_2 were invited to participate in a T_3 telephone interview (Rohde et al., 1997), as were an approximately equal number of randomly selected control participants with no history of mental disorder at T_2 . T_3 assessments are currently ongoing (participation rate = 93%). Of the T_2 participants selected for T_3 interview, data are currently available for 767 individuals.

Diagnostic Interviews

Axis I Disorders. Participants were interviewed at T_1 with a version of the Schedule for Affective Disorders and Schizophrenia for School-Age Children which combined features of the Epidemiologic version (Orvaschel et al., 1982) and the Present Episode version and included additional items to derive *DSM-III-R* diagnoses (American Psychiatric Association, 1987). At T_2 and T_3 , participants were interviewed using the Longitudinal Interval Follow-up Evaluation (Keller et al., 1987), which elicited detailed information about the course of

psychiatric symptoms and disorders since the previous interview. T_1 diagnoses were made using *DSM-IV* (American Psychiatric Association, 1994) criteria.

Axis II Disorders. Our previous experience (Lewinsohn et al., 1997) indicated that the rates of most personality disorders in our community sample of young adults were extremely low. Therefore, we focused on the two *DSM-IV* personality disorders that were most frequent and most relevant to our purposes: antisocial and borderline personality disorders, using relevant portions of the Personality Disorder Examination (PDE) (Loranger, 1988). In addition to categorical diagnoses, the PDE also provides dimensional scores (i.e., summation of partial and full symptom criteria), which were dichotomized at the 90th percentile to define elevated dimensional score for the 2 personality disorders.

Sample for Present Report

The initial sample for this study consisted of 460 women (60.0%) and 307 men (40.0%). The majority (89.8%) were white. At the time of the T_1 follow-up, the mean age of the sample was 24.1 ($SD = 0.4$), and the mean number of years of education completed was 14.0 ($SD = 1.8$). Approximately half of the participants (48.4%) were single; 47.7% were married or living with someone in a marriage-like relationship; and 3.9% were separated or divorced. Mean time between T_1 and T_2 was 6.3 years ($SD = 1.2$).

Thirteen participants (9 women, 4 men) had a diagnosis of bipolar disorder prior to age 19 and were not included in this study. Fifteen participants (8 women, 7 men) had "pure" dysthymia (i.e., no comorbid MDD) prior to age 19 and also were not included. Thus, this study focuses on the course of psychopathology from age 19 to age 24 in the remaining 739 participants: (a) 261 participants with adolescent MDD (74.7% female); (b) 73 participants with adolescent adjustment disorder (64.4% female); (c) 133 participants with adolescent nonaffective disorder (48.1% female); and (d) 272 participants who had no disorder (ND) through age 18 (50.4% female). In this classification, MDD took precedence over adjustment disorder, which took precedence over nonaffective disorder (e.g., participants with a lifetime history of MDD and adjustment disorder were included in the adolescent MDD group).

Of the 261 participants in the adolescent MDD group, 8.4% had dysthymia (19 of these 22 participants also had a nonaffective disorder) and 51.0% had a nonaffective disorder by age 19 (25.7% anxiety disorder, 26.1% substance use disorder, 11.1% disruptive behavior disorder, 3.4% eating disorder, 0.4% delusional disorder).

The remaining 49.0% of adolescent MDD participants had no diagnoses of dysthymia or nonaffective disorder disorders by age 19.

Of the 73 participants in the adolescent adjustment disorder group, 35.6% had a nonaffective disorder (16.4% anxiety disorder, 20.5% substance use disorder, 5.5% disruptive behavior disorder). The remaining 64.4% of adolescent adjustment disorder participants had no other diagnoses.

Of the 133 participants in the adolescent nonaffective disorder group, 35.3% had an anxiety disorder, 57.1% had a substance use disorder, 21.8% had a disruptive behavior disorder, 3.8% had an eating disorder, and 0.8% had schizophrenia. The remaining 272 participants had no diagnosis by age 19 and were considered to have "no disorder" (ND) through adolescence.

As our focus is on the development of new episodes of disorder in young adulthood (i.e., incidence), the rates of Axis I disorders from age 19 to age 24 were examined after excluding from the relevant analyses participants who were in the midst of a current episode of that disorder at age 19 (20 participants were having a current episode of MDD, 2 had an adjustment disorder, and 91 had a nonaffective disorder at age 19).

Demographic characteristics of the 4 adolescent diagnostic groups at T_1 are shown in Table 1. Significant T_1 diagnostic group differences were present for gender, household composition, and maximum parental education. The adolescent MDD and adjustment disorder groups contained a significantly greater proportion of women than the other adolescent diagnostic groups. Parents of the adolescent MDD participants had less education than in the other diagnostic groups, and, compared with the adolescent ND group, the adolescent MDD participants were less likely to live with both of their biological parents.

RESULTS

Effects of T_1 Demographic Variables on Psychopathology in Young Adulthood

Controlling for other demographic variables and for adolescent diagnostic group status, gender had a significant main effect in predicting psychopathology between 19 and 24 years of age. Being female increased the likelihood of future MDD (adjusted odds ratio [OR] = 1.73, 95% confidence interval [CI] = 1.22–2.47) and adjust-

TABLE 1
Demographic Characteristics of the Four Diagnostic Groups at Time 1

Variable	Adolescent Diagnostic Group				Test Statistic
	MDD (<i>n</i> = 261)	ADJUST (<i>n</i> = 73)	NONAFF (<i>n</i> = 133)	ND (<i>n</i> = 272)	
Female (%)	74.7 ^a	64.4 ^a	48.1 ^b	50.4 ^b	$\chi^2 = 42.44^{***}$
Age, mean (SD)	17.0 (1.0)	16.8 (1.0)	16.8 (1.1)	17.0 (1.2)	$F = 1.11$, NS
White (%)	89.3	97.3	88.7	88.2	$\chi^2 = 5.27$, NS
Living with 2 biological parents (%)	45.2 ^a	57.5 ^{a,b}	54.1 ^{a,b}	64.0 ^b	$\chi^2 = 19.17^{***}$
One or both parents had college degree (%)	34.5 ^a	56.2 ^b	47.4 ^b	45.6 ^b	$\chi^2 = 14.66^{**}$

Note: Percentages or means having the same superscript are not significantly different at $p < .05$. MDD = major depressive disorder; ADJUST = adjustment disorder with depressed mood; NONAFF = nonaffective disorder; ND = no disorder; NS = not significant.

^{**} $p < .01$; ^{***} $p < .001$.

ment disorder (adjusted OR = 2.13, 95% CI = 1.16–3.91). Being male increased the likelihood of future nonaffective disorder (adjusted OR = 1.70, 95% CI = 1.23–2.60), an Axis II disorder (adjusted OR = 6.66, 95% CI = 1.76–25.26), and elevated antisocial personality dimensional scores (adjusted OR = 7.43, 95% CI = 3.79–14.58). Controlling for the other factors, living with 1 biological parent rather than 2 as an adolescent was associated with a future diagnosis of an Axis II disorder (adjusted OR = 3.82, 95% CI = 1.01–14.50).

Psychopathology in Young Adulthood as a Function of Adolescent Diagnostic Group Status

Table 2 contains the frequency of psychiatric disorders from 19 to 24 years of age as a function of diagnostic status through age 18. As can be seen, 45% of the adolescent MDD group experienced a recurrence of MDD between age 19 and age 24, compared with MDD first incidence rates of 34% in the adolescent adjustment disorder group, 28% in the adolescent nonaffective group, and 18% in the adolescent ND group. Four additional participants in the adolescent MDD group (1.7%), and

no participant in the remaining adolescent diagnostic groups, developed dysthymia in this time period. Six participants (0.8%) had bipolar disorder diagnosed between 19 and 24 years of age: 3 participants from the adolescent MDD group, 2 from the adolescent nonaffective disorder group, and 1 from the adolescent ND group.

The rates of psychiatric disorders in young adulthood were compared with 3 planned contrasts: (1) adolescent MDD versus ND, (2) adolescent MDD versus nonaffective disorder, and (3) adolescent MDD versus adjustment disorder. Group differences were evaluated using hierarchical multiple logistic regression analyses, with gender, household composition, and maximum parental education at T₁ entered as the first block, followed by adolescent diagnostic group status with the 3 contrasts entered as the second block, and interactions between demographic variables and adolescent diagnostic group status entered as the third block (all interactions with gender, household composition, and maximum parental education were nonsignificant). Given a significant contrast in the second block, the OR (adjusted for demographic characteristics, with 95% CI) for increased risk

TABLE 2
Frequency of Diagnosis in Young Adulthood (19–24 Years of Age) as a Function of Adolescent Diagnostic Group

Diagnosis 19–24	Adolescent Diagnostic Group				Adjusted ^a OR (95% CI)		
	MDD	ADJUST	NONAFF	ND	MDD vs. ND	MDD vs. NONAFF	MDD vs. ADJUST
MDD							
<i>n</i>	107/238	25/73	37/131	50/271	3.2 (2.2–4.9)	1.8 (1.2–3.0)	NS
%	45.0	34.2	28.2	18.5			
ADJUST							
<i>n</i>	22/261	3/71	14/133	22/272	NS	NS	NS
%	8.4	4.2	10.5	8.1			
NONAFF							
<i>n</i>	72/217	20/65	30/83	53/272	2.3 (1.5–3.6)	NS	NS
%	33.2	30.8	36.1	19.5			
Any Axis I							
<i>n</i>	124/199	30/63	45/83	102/272	2.7 (1.8–3.9)	NS	1.8 (1.01–3.2)
%	62.3	47.6	54.2	37.5			
Axis II							
<i>n</i>	7/261	1/73	3/133	2/272	NS	NS	NS
%	2.7	1.4	2.3	0.7			
Antisocial PDE score							
<i>n</i>	25/255	2/65	22/128	8/266	6.1 (2.6–14.5)	NS	4.7 (1.04–21.1)
%	9.8	3.1	17.2	3.0			
Borderline PDE score							
<i>n</i>	25/255	2/65	6/128	2/266	14.9 (3.4–64.8)	NS	NS
%	9.8	3.1	4.7	0.8			

Note: MDD = major depressive disorder; ADJUST = adjustment disorder with depressed mood; NONAFF = nonaffective disorder; ND = no disorder; OR = odds ratio; CI = confidence interval; PDE = Personality Disorder Examination; NS = not significant. Twenty-five participants had missing PDE scores.

^a Adjusted for gender, family structure, and parental education at T₁.

in the adolescent MDD group was calculated and appears in the last 3 columns of Table 2.

Compared with adolescent ND participants, participants with adolescent MDD had significantly higher rates of future MDD, nonaffective Axis I disorders, and any Axis I disorder in young adulthood, as well as elevated scores on the antisocial and borderline personality disorder dimensions (Table 2). The difference between adolescent MDD and ND groups in rates of future nonaffective disorder appeared to be due to the presence of another mental disorder in the individuals with adolescent MDD (described in more detail in a later section); when the rate of nonaffective disorder between age 19 and age 24 was examined for the ND group versus individuals with "pure" (noncomorbid) adolescent MDD, differences were nonsignificant (19.5% versus 26.6%, respectively; $\chi^2[1, n = 400] = 2.56, p > .05$).

Compared with the adolescent participants with nonaffective disorder, adolescents with MDD had an increased probability of developing MDD in the future. The lack of a significant difference between the adolescent MDD and nonaffective groups on rates of future nonaffective disorder was not due to the inclusion of adolescent MDD cases who had another mental disorder; individuals with "pure" adolescent MDD were compared with participants in the adolescent nonaffective group and did not differ in rates of future nonaffective disorder (26.6% versus 36.1%; $\chi^2[1, n = 211] = 2.19, p > .05$).

Although they were not significantly elevated on rates of future MDD or nonaffective disorder, compared with participants with adolescent adjustment disorder, individuals with adolescent MDD were significantly more likely to develop an Axis I disorder in young adulthood and to be elevated on the antisocial personality dimensional score.

Outcome Differences Among the Three Non-MDD Groups

Additional analyses examined differences in the occurrence of future MDD and nonaffective disorders among the 3 diagnostic groups who had not experienced adolescent MDD: adolescent nonaffective and adjustment disorder groups did not differ from each other and were both significantly elevated compared with the ND controls (MDD incidence: adolescent adjustment versus ND adjusted OR = 2.11 [95% CI = 1.18–3.76], adjustment versus nonaffective adjusted OR = 1.71 [95% CI = 1.05–2.81]; nonaffective disorder incidence: adolescent adjustment versus ND adjusted OR = 2.06 [95% CI =

1.11–3.82], adjustment versus nonaffective adjusted OR = 2.34 [95% CI = 1.36–4.04]).

Effects of Psychiatric Comorbidity on the Course of Adolescent MDD

The 261 participants who had an episode of MDD by age 19 were divided into those who had a comorbid nonaffective Axis I disorder in adolescence ($n = 133$) and those who did not ($n = 128$). (The number of participants within the comorbid and noncomorbid MDD groups varied per outcome disorder because individuals with the given disorder at age 19 were excluded from analyses.) The 2 adolescent MDD groups were compared in a series of contingency tables examining the probability of various diagnostic categories between 19 and 24 years of age. Differences between the comorbid and "pure" adolescent MDD cases in the likelihood of future MDD, dysthymia, and adjustment disorder were nonsignificant. However, individuals with comorbid adolescent MDD were more likely than those with "pure" MDD to develop a nonaffective disorder in the future (42.2% versus 26.8%; $\chi^2[1, n = 217] = 5.67, p < .05$); to develop an Axis II disorder in the future (5.3% versus 0.0%; 2-tailed Fisher exact test, $p < .05$); and to have elevated scores on the antisocial personality dimension (17.1% versus 2.4%; $\chi^2[1, n = 255] = 15.52, p < .001$) and borderline personality dimension (15.5% versus 4.0%; $\chi^2[1, n = 255] = 9.47, p < .001$). Interactions with gender were nonsignificant.

We also examined whether adolescent MDD participants who had dysthymia (double depression) before age 19 ($n = 22$) were at increased risk of new episodes of disorder between age 19 and age 24. Of the 22 individuals with adolescent double depression, 19 (86%) also had an adolescent nonaffective disorder. After controlling for the effects of comorbid nonaffective disorder, adolescent MDD participants with dysthymia were no more likely than adolescent MDD participants without dysthymia to develop any of the examined diagnostic categories between age 19 and age 24.

Outcome of Participants in a Psychiatric Episode at Age 19

The course of disorder for the 20 participants who were excluded from the primary analyses because of a current episode of MDD at age 19 is described briefly here. All 20 participants recovered by age 24. Half (50.0%) had a recurrence of MDD by age 24, and 5

(25.0%) of those who did not have an MDD recurrence developed a nonaffective disorder.

More generally, to examine the possibility that our results may have been influenced by not including participants with a current diagnosis at age 19, all analyses were recomputed including the participants who had been previously excluded because they were in the midst of an episode of the specific disorder at age 19. Changes were very minor and did not modify interpretation of the findings. The pattern of results for the 3 planned contrasts did not change, with adjusted ORs varying by no more than 0.3 in magnitude.

DISCUSSION

To our knowledge, this is the largest study addressing the continuity of MDD from childhood and adolescence to young adulthood currently in the literature. The results clearly illustrate a strong pattern of continuity for depression, in that the rate of MDD in young adulthood was significantly elevated in the adolescent MDD group. To wit, 45% of adolescents with a history of MDD developed a new episode of MDD between the ages of 19 and 24, which translates into an average annual MDD recurrence rate of 9% over the 5-year period. Annual MDD incidence rates for the nonaffective and ND groups were significantly lower (5.6% and 3.7%, respectively).

Those with adolescent MDD also had elevated rates of nonaffective disorders between the ages of 19 and 24. However, rates of future nonaffective disorder among the adolescent MDD participants did not differ from rates among adolescents with nonaffective disorders (average annual nonaffective disorder rate = 6.6% versus 7.2%, respectively). These results are consistent with previous studies using clinical samples in finding a higher rate of nonaffective disorders in young adulthood among depressed children and adolescents than normal controls (Rao et al., 1995), but a similar rate compared with children and adolescents with nonaffective disorders (Garber et al., 1988; Harrington et al., 1990). Adolescents with MDD also exhibited elevated rates of antisocial and borderline personality disorder traits, which is consistent with previous findings of early-onset depression being associated with higher rates of various personality disorders (Cohen et al., 1998; Fava et al., 1996).

An interesting feature of this study was the inclusion of a near-neighbor comparison group of adolescents

with adjustment disorder with depressed mood. This is the first study of the course of adjustment disorder from adolescence to young adulthood. The results suggest that the prognosis of adolescent adjustment disorder is nearly as bad as that of adolescent MDD, in that rates of future MDD and nonaffective disorder for the adolescent adjustment disorder and the adolescent MDD groups did not differ. Thus, our results are somewhat at variance with the finding of Kovacs et al. (1984) that child/adolescent patients with MDD were at greater risk of subsequent MDD compared with patients with adjustment disorder. However, when all Axis I disorders developing between age 19 and 24 years were combined into a single category, the adolescent MDD group in our study had an elevated incidence of disorder relative to the adolescent adjustment disorder group.

It was also interesting to note that adjustment disorder during adolescence was not associated with significantly elevated rates of adjustment disorder during young adulthood. The absence of diagnostic continuity for adjustment disorder may relate to the fortuitous nature of stressful life events that precipitate the disorder. Nonetheless, individuals who succumb to adjustment disorder with depressed mood in the face of a stressor as adolescents are more vulnerable to future MDD as young adults, suggesting some form of vulnerability.

Among adolescents with MDD, the presence of a comorbid nonaffective disorder increased the probability of future nonaffective psychopathology (both Axis I and II). Regarding the potential impact of comorbid dysthymia, almost all adolescents with lifetime MDD and dysthymia also had a nonaffective disorder, and once the effects of nonaffective disorder were taken into consideration, the presence of dysthymia was not uniquely associated with increased risk of future psychopathology among the adolescents with MDD.

Gender effects in this study were few. In general, females were more likely to develop MDD and adjustment disorder in young adulthood, while males were more likely to develop nonaffective Axis I disorders and Axis II psychopathology. However, gender did not significantly interact with adolescent diagnostic group in predicting psychopathology in young adulthood. Previous studies have been inconsistent regarding whether women with MDD are at greater risk for recurrence than men (Amenson and Lewinsohn, 1981; Kessler et al., 1993), and this issue deserves continued attention.

Although this study had a number of strengths, several potential limitations should be noted. First, we over-

sampled adolescents with psychiatric disorders for the T₃ follow-up. Thus, the data reported here are not intended as estimates of the prevalence of psychopathology in young adulthood. Second, we did not examine the consequences of specific nonaffective Axis I disorders during adolescence on functioning in young adulthood. The natural outcome of specific nonaffective disorders, as well as the degree to which specific nonaffective disorders predict MDD first incidence and recurrence in young adulthood, will be examined in future publications by our group.

Clinical Implications

The results of this study document that adolescent MDD confers a high degree of risk for MDD recurrence in young adulthood, as well as an increased probability of future nonaffective disorders (predominantly substance use disorders) and Axis II pathology. Taken in their totality, our results have at least 2 compelling public health implications. First, given the negative consequences of early-onset MDD, the findings stress the importance of developing effective interventions to prevent the onset of depression during childhood and adolescence (e.g., Mrazek and Haggerty, 1994). Since the risk factors for adolescent depression are becoming well known (e.g., Lewinsohn et al., 1994b; Weissman et al., 1992), it is possible to screen effectively for those at elevated risk for depression. Given that a few promising prevention attempts with adolescents at risk for depression have shown encouraging results (e.g., Clarke et al., 1995), a major public health priority should be to redouble these efforts. Second, children and adolescents who have experienced MDD need to be targeted for the prevention of future depressive episodes. Until empirically validated effective depression prevention interventions are developed, periodic clinical monitoring of at-risk adolescents to detect MDD recurrence is needed.

REFERENCES

- Amenson CS, Lewinsohn PM (1981), An investigation into the observed sex difference in prevalence of unipolar depression. *J Abnorm Psychol* 90:1-13
- American Psychiatric Association (1987), *Diagnostic and Statistical Manual of Mental Disorders, 3rd edition-revised (DSM-III-R)*. Washington, DC: American Psychiatric Association
- American Psychiatric Association (1994), *Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV)*. Washington, DC: American Psychiatric Association
- Andreasen NC, Hoek PR (1982), The predictive value of adjustment disorders: a follow-up study. *Am J Psychiatry* 139:584-590
- Cantwell DP, Baker L (1989), Stability and natural history of DSM-III childhood diagnoses. *J Am Acad Child Adolesc Psychiatry* 28:691-700
- Clarke GN, Hawkins W, Murphy M, Sheeber LB, Lewinsohn PM, Seeley JR (1995), Targeted prevention of unipolar depressive disorder in an at-risk sample of high school adolescents: a randomized trial of a group cognitive intervention. *J Am Acad Child Adolesc Psychiatry* 34:312-321
- Cohen P, Cohen J, Kasen S et al. (1993), An epidemiological study of disorders in late childhood and adolescence, I: age- and gender-specific prevalence. *J Child Psychol Psychiatry* 34:851-867
- Cohen P, Kasen S, Johnson J, Sharma D, Brook J (1998), Psychosocial development and personality disorders in adolescence to adulthood: age-specific and gender related changes. Presentation at the annual meeting of the Life History Research Society, Seattle, May
- Eastgate J, Gilmour L (1984), Long term outcome of depressed children: a follow-up study. *Dev Med Child Neurol* 26:68-80
- Fava M, Alpert JE, Borus JS et al. (1996), Patterns of personality disorder comorbidity in early-onset versus late-onset major depression. *Am J Psychiatry* 153:1308-1312
- Feehan M, McGee R, Williams SM (1993), Mental health disorders from age 15 to age 18 years. *J Am Acad Child Adolesc Psychiatry* 32:1118-1126
- Garber J, Kriss MR, Koch M, Lindholm L (1988), Recurrent depression in adolescents: a follow-up study. *J Am Acad Child Adolesc Psychiatry* 27:49-54
- Garrison CZ, Jackson KL, Marsteller F, McKeown R, Addy C (1990), A longitudinal study of depressive symptomatology in young adolescents. *J Am Acad Child Adolesc Psychiatry* 29:581-585
- Geller B, Fox LW, Clark KA (1994), Rate and predictors of prepubertal bipolarity during follow-up of 6- to 12-year old depressed children. *J Am Acad Child Adolesc Psychiatry* 33:461-468
- Goodman SH, Lahey BB, Fielding B, Dulcan M, Narrow W, Regier D (1997), Representatives of clinical samples of youths with mental disorders: a preliminary population-based study. *J Abnorm Psychol* 106:3-14
- Greenberg WM, Rosenfeld DN, Ortega EA (1995), Adjustment disorder as an admission diagnosis. *Am J Psychiatry* 152:459-461
- Harrington R, Fudge H, Rutter M, Pickles A, Hill J (1990), Adult outcomes of childhood and adolescent depression, I: psychiatric status. *Arch Gen Psychiatry* 47:465-473
- Harrington R, Fudge H, Rutter M, Pickles A, Hill J (1991), Adult outcomes of childhood and adolescent depression, II: links with antisocial disorders. *J Am Acad Child Adolesc Psychiatry* 30:434-439
- Kandel DB, Davies M (1986), Adult sequelae of adolescent depressive symptoms. *Arch Gen Psychiatry* 43:255-262
- Kashani JH, Carlson GA, Beck NC et al. (1987), Depression, depressive symptoms, and depressed mood among a community sample of adolescents. *Am J Psychiatry* 144:931-934
- Keller MB, Lavori PW, Beardslee WR, Wunder J, Ryan N (1991), Depression in children and adolescents: new data on "undertreatment" and a literature review on the efficiency of available treatments. *J Affect Disord* 21:163-171
- Keller MB, Lavori PW, Friedman B, Nielsen E, Endicott J, McDonald-Scott PA (1987), The Longitudinal Interval Follow-up Evaluation: a comprehensive method for assessing outcome in prospective longitudinal studies. *Arch Gen Psychiatry* 44:540-548
- Kessler RC, McGonagle KA, Swartz M, Blazer DG, Nelson CB (1993), Sex and depression in the National Comorbidity Survey, I: lifetime prevalence, chronicity and recurrence. *J Affect Disord* 29:85-96
- Kovacs M (1996), Presentation and course of major depressive disorder during childhood and later years of the life span. *J Am Acad Child Adolesc Psychiatry* 35:705-715
- Kovacs M, Feinberg TL, Crouse-Novack MA, Paulauskas SL, Pollock M, Finkelstein R (1984), Depressive disorders in childhood, II: a longitudinal study of the risk for a subsequent major depression. *Arch Gen Psychiatry* 41:643-649
- Kovacs M, Gatsonis C, Pollock M, Parrone PL (1994), A controlled prospective study of DSM-III adjustment disorder in childhood: short-term prognosis and long-term predictive validity. *Arch Gen Psychiatry* 51:535-541
- Kovacs M, Ho V, Pollock MH (1995), Criterion and predictive validity of the diagnosis of adjustment disorder: a prospective study of youths with new-onset insulin-dependent diabetes mellitus. *Am J Psychiatry* 152:523-528
- Lewinsohn PM, Clarke GN, Seeley JR, Rohde P (1994a), Major depression in community adolescents: age at onset, episode duration, and time to recurrence. *J Am Acad Child Adolesc Psychiatry* 33:809-818

- Lewinsohn PM, Hops H, Roberts RE, Seeley JR, Andrews JA (1993), Adolescent psychopathology, I: prevalence and incidence of depression and other *DSM-III-R* disorders in high school students. *J Abnorm Psychol* 102:133-144
- Lewinsohn PM, Klein DN, Seeley JR (1995), Bipolar disorders in a community sample of older adolescents: prevalence, phenomenology, comorbidity, and course. *J Am Acad Child Adolesc Psychiatry* 34:454-463
- Lewinsohn PM, Roberts RE, Seeley JR, Rohde P, Gotlib IH, Hops H (1994b), Adolescent psychopathology, II: psychosocial risk factors for depression. *J Abnorm Psychol* 103:302-315
- Lewinsohn PM, Rohde P, Seeley JR, Klein DN (1997), Axis II psychopathology as a function of Axis I disorders. *J Am Acad Child Adolesc Psychiatry* 36:1752-1759
- Loranger AW (1988), *Personality Disorder Examination (PDE) Manual*. Yonkers, NY: DV Communications
- McCauley E, Myers K, Mitchell J, Calderon R, Schloredt K, Treder R (1993), Depression in young people: initial presentation and clinical course. *J Am Acad Child Adolesc Psychiatry* 32:714-722
- McGee R, Feehan M, Williams S, Partridge F, Silva PA, Kelly J (1990), *DSM-III* disorders in a large sample of adolescents. *J Am Acad Child Adolesc Psychiatry* 29:611-619
- Mrazek PJ, Haggerty RJ (1994), *Reducing Risks for Mental Disorders: Frontiers for Preventive Intervention Research*. Washington, DC: National Academy Press
- Newcorn JH, Strain J (1998), Adjustment disorder in children and adolescents. *J Am Acad Child Adolesc Psychiatry* 31:318-326
- Offord DR, Boyle MH, Szatmari P et al. (1987), Ontario Child Health Study, II: six month prevalence of disorder and rates of service utilization. *Arch Gen Psychiatry* 44:832-836
- Orvaschel H, Puig-Antich J, Chambers WJ, Tabrizi MA, Johnson R (1982), Retrospective assessment of prepubertal major depression with the Kiddie-SADS-E. *J Am Acad Child Psychiatry* 21:392-397
- Rao U, Ryan ND, Birmaher B et al. (1995), Unipolar depression in adolescents: clinical outcome in adulthood. *J Am Acad Child Adolesc Psychiatry* 34:566-578
- Reinherz HZ, Giaconia RM, Lefkowitz ES, Pakiz B, Frost AK (1993), Prevalence of psychiatric disorders in a community population of older adolescents. *J Am Acad Child Adolesc Psychiatry* 32:369-377
- Rohde P, Lewinsohn PM, Seeley JR (1997), Comparability of telephone and face-to-face interviews assessing Axis I and II disorders. *Am J Psychiatry* 154:1593-1598
- Sanford M, Szatmari P, Spinner M et al. (1995), Predicting the one-year course of adolescent major depression. *J Am Acad Child Adolesc Psychiatry* 34:1618-1628
- Strober M, Lampert C, Schmidt S, Morrell W (1993), The course of major depressive disorder in adolescents, I: recovery and risk of manic switching in a follow-up of psychotic and nonpsychotic subtypes. *J Am Acad Child Adolesc Psychiatry* 32:34-42
- Velez CN, Johnson J, Cohen P (1989), A longitudinal analysis of selected risk factors for childhood psychopathology. *J Am Acad Child Adolesc Psychiatry* 28:861-864
- Verhulst FC, Van Der Ende J, Ferdinand RF, Kasius MC (1997), The prevalence of *DSM-III-R* diagnoses in a national sample of Dutch adolescents. *Arch Gen Psychiatry* 54:329-336
- Weissman MM, Fendrich M, Warner V, Wickramaratne P (1992), Incidence of psychiatric disorder in offspring at high and low risk for depression. *J Am Acad Child Adolesc Psychiatry* 31:640-648

The Role of Teasing in Development and Vice Versa. Theodore R. Warm, MD

This study was undertaken because there are almost no reports in the scientific literature on the subject of teasing. Teasing changes as it expresses developmental issues from playing peek-a-boo in infancy to expressing personal issues, such as boy/girl relationships, in adolescence. The form also changes as the cognitive capacity of the child changes. Two hundred fifty children from 1st, 3rd, 6th, 8th, and 11th grades were asked to describe teasing, its motive, and the reaction of the victim. The form of teasing was organized into hurtful (hitting or spitting), mean (calling a burn victim ugly) and symbolic, which allows the victim to realize that the provocation is "just words." The forms correlated with age and suggest that progression through these forms can be understood in terms of the theories of psychological stages drawn from Piagetian and psycholinguistic studies. The dominant motivation for the child doing the teasing seemed at every age to be sadistic pleasure in the discomfort of the child being teased, although one sees some playful, benign teasing by late adolescence. *J Dev Behav Pediatr* 1997;18:97-101